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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/821,410	03/29/2001	Rabah S. Hamdi	H052617.1077US0	3679
1200	7590	03/16/2005	EXAMINER	
AKIN, GUMP, STRAUSS, HAUER & FELD 1111 LOUISIANA STREET 44TH FLOOR HOUSTON, TX 77002			TSE, YOUNG TOI	
			ART UNIT	PAPER NUMBER
			2637	

DATE MAILED: 03/16/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/821,410

Applicant(s)

HAMDI, RABAH S.

Examiner

YOUNG T. TSE

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 04 January 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-52 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-8, 10-32, 34-45 and 47-52 is/are rejected.
- 7) ☒ Claim(s) 9, 33 and 46 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04 January 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Drawings*

1. The drawings were received on January 04, 2005. These drawings are acceptable.

### *Claim Objections*

2. Claims 1-38, 44 and 46 are objected to because of the following informalities: in claim 1, line 3, "a training sequence signal" should be "a training signal sequence"; in claim 9, lines 2 and 3, " $\bar{X}$  is", "and X", and "of X" should be "X is", "and  $\bar{X}$ ", and "of X", respectively; in claim 16, lines 4 and 5, "a transmission media channel" and "signal;" should be "the transmission media channel" and "signal; and", respectively; in claim 17, line 5, "M –" should be "M ="; in claim 19, line 3, "the output signal" should be "the observed or measured output signal"; in claim 26, lines 3 and 10, "a transmission media channel;" and "the training sequence" should be "the transmission media channel; and" and "the training signal sequence", respectively; in claim 31 (line 1) and claim 44 (line 1), "processor" should be "the processor"; in claim 34, line 1, "claim 26" should be "claim 33"; and in claim 46, line 2, correct the equation of matrix M, line 3, "the training sequence in matrix form, and X is the Hermitian of  $\bar{X}$ " should be "the training signal sequence in matrix form,  $\bar{X}$  is the Hermitian of X". Wherein the dependent claims 2-8, 10-15, 18, 20-25, 27-30, 32, and 35-38 are depended upon claims 1, 16 and 26. Appropriate correction is required.

***Claim Rejections - 35 USC § 112***

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 16-25 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The amendment of the using step recited in claim 16 contains the subject matter which was not originally described in the specification as amended in the specification in paragraph [0014] and claimed in the original claims. Wherein the dependent claims 17-25 are depended upon claim 16.

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 17-19 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In lines 1-3 of both claims 17 and 19, the repeat subject matter of the using step does not correspond to the using step recited in claim 16. Wherein the dependent claim 18 is depended upon claim 17.

***Claim Rejections - 35 USC § 102***

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 1-8, 10, 12-16 and 19-25 are rejected under 35 U.S.C. 102(b) as being anticipated by Solve et al..

Solve et al. (US Patent No. 5,675,612) discloses a method and apparatus (Figures 1, 2 and 7) for recovering a timing phase and frequency of a sampling clock signal in a receiver for determining a desired timing phase by minimizing a mean squared error due to uncanceled precursor intersymbol interference.

In Figure 1, Solve shows a first transceiver or modem (20) for communication with a second transceiver or modem (26) through a transmission channel (22). Figures 2 and 7 show the detailed embodiment of each of the transceivers for communication with each other.

With respect to claims 1 and 16, the transmitter section of the transceiver (20) generates and transmits a training signal sequence to the transmission channel (22) to obtain an output signal of an unknown impulse response of the channel characteristics of the transmission channel (22); the echo canceller (36) and the summation circuit (52) compute a reference value from the training signal sequence and decouple the training signal sequence from the output signal of the transmission channel (22) to obtain an estimate of the impulse response of the transmission channel. Wherein the error signal

generated by the summation circuit (52) is provided to an adaptive equalizer, such as, the decision feedback equalizer (68). An error signal generated by another summation circuit (66) is used to update or control the coefficient of the echo canceller (36) and the decision feedback equalizer (68). See column 5, lines 55-65.

With respect to claims 2-8, 10, 12-15, and 19-25, the claimed subject matter of the impulse response of the channel to remove impairments imposed by the transmission channel on received signals; the estimate of the impulse response of the channel comprises convergence techniques; the training signal sequence comprises a known training signal sequence; the estimated impulse response of the channel comprises computing an initial estimate of the impulse response; the estimate of the impulse response of the channel is hardware implemented; the estimate of the impulse response of the channel for removing echoes from signals received from the channel; the estimate of the impulse response of the channel for setting the coefficient of a filter, an echo canceller, or an equalizer is either discussed in the description of the prior art in the instant application or shown in the receiver section of Figures 2 and 7 since the claimed subject matter are well known in the communications system for reducing noise and interference between communication devices over a transmission channel.

### ***Claim Rejections - 35 USC § 103***

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 11, 26-32, 34-45 and 47-52 are rejected under 35 U.S.C. 103(a) as being unpatentable over Solve et al. in view of Zvonar.

With respect to claims 11, 26-28, 39-41, and 48, although Solve does not explicitly show or suggest that a digital signal processor (DSP), a central process unit (PCU), or a software implementation could be used in the modem (22 or 26) to perform the operation of the noise reduction and interference of the channel characteristics of the transmission channel in the receiver section.

Zvonar (US Patent No. 6,504,884 B1) also discloses a modem circuit in Figure 2 comprising a receiver section (34) having a DSP (52) and a memory (55) for reducing the noise reduction and interference of the channel characteristics of the transmission channel (42). The detailed embodiment of the receiver section (34) is shown in Figure 3 comprising a burst storage circuit (50), a DC offset remove circuit (51), a DC offset estimation circuit, and an equalizer (53).

Therefore, it would have been obvious to one of ordinary skill in the art to implement or integrate Solve's receiver section by a DSP which may include software implementation to perform the noise reduction, the equalization, and the impulse response of the channel characteristics of the transmission channel as taught by Zvonar in order to improve the signal transmission between the two modems.

With respect to claims 29-32, 34-38, 42-45, 47 and 49-52, the claimed subject matter of a modem or transceiver or a hybrid is coupled the processor to the transmission channel; the processor forms part of a communications system; the

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processor forms part of a modem; a hybrid is coupled to the processor and the transmission channel; the estimate of the impulse response of the channel is computed in a hardware implementation; the processor is adapted to use the estimate of the impulse response of the channel to remove impairments imposed by the transmission channel on received signals; a filter adapted to remove channel impairments from signals received from the channel estimate of the impulse response of the channel; the filter comprises an echo canceller for improving echo signals; and the filter comprises an equalizer whose output is equalized for gain and phase is either shown in Figures 2 and 7 of Solve' receiver section or shown in Figures 2 and 3 in Zvonar's receiver section, or the claimed subject matter is well known in the communications system for reducing noise and interference between communication devices over a transmission channel.

***Allowable Subject Matter***

11. Claims 9, 33 and 46 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

12. The following is a statement of reasons for the indication of allowable subject matter: the prior art fails to show or suggest that the reference valued is a matrix  $M$  by an equation (6) as shown in the specification on page 8.



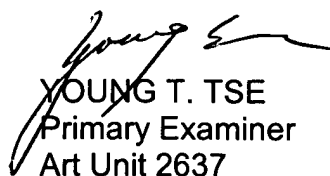
**Conclusion**

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. References Friedman and Dobson et al. are made of record as describing a related communications system comprising a cancellation circuit and an equalizer circuit in a receiver for reducing noise and interference of the channel characteristics of a transmission channel.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to YOUNG T. TSE whose telephone number is (571) 272-3051. The examiner can normally be reached on Monday and Wednesday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jay Patel can be reached on (571) 272-2988. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
YOUNG T. TSE  
Primary Examiner  
Art Unit 2637